APPLICABLE CODES AND STANDARDS

1. THE INTERNATIONAL BUILDING CODE, (IBC 2006) AND ALL OTHER LOCAL AND STATE AGENCIES HAVING JURISDICTION OVER THIS PROJECT.
2. DEPARTMENT OF VETERANS AFFAIRS SIESMIC DESIGN REQUIREMENTS (H-18-8).
3. VA PROGRAM GUIDE P6-18-15 VOLUME B.
4. PHYSICAL SECURITY DESIGN MANUAL FOR VA FACILITIES (FINAL DRAFT JULY 2007).
5. BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318-08).
6. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)
   MANUAL OF STEEL CONSTRUCTION, ALLOWABLE STRESS DESIGN 9TH EDITION
   MANUAL OF STEEL CONSTRUCTION, LOAD & RESISTANCE FACTOR DESIGN 3RD EDITION.
7. AMERICAN WELDING SOCIETY (AWS) D1.1, D1.3, D1.4.
8. MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES (ASCE 7-02).
9. STEEL DECK INSTITUTE SPECIFICATIONS AND LOAD TABLES.
10. ASTM MATERIAL STANDARDS AS NOTED.
11. AISI SPECIFICATIONS FOR DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS.
12. STEEL JOIST INSTITUTE, STANDARD SPECIFICATIONS, LOAD TABLES, AND WEIGHT TABLES FOR STEEL JOISTS AND JOIST GIRDERS.
13. BUILDING CODE REQUIREMENTS AND SPECIFICATIONS FOR MASONRY STRUCTURES (ACI 530-08 AND ACI 530.1-08).

DESIGN LOADS

1. DEAD LOAD – ACTUAL WEIGHT OF MATERIALS USED ADDING THE FOLLOWING:

ALLOWANCE FOR CEILINGS, LIGHTING, PLUMBING, FIRE PROTECTION AND HVAC	10 PSF
ALLOWANCE FOR PARTITIONS	20 PSF
ALLOWANCE FOR ROOFING SYSTEM	20 PSF

2. LIVE LOAD

AREA OF BUILDING	DESIGN LIVE LOAD
OFFICE/ADMINISTRATIVE SPACE	80 PSF
LABORATORIES	125 PSF
LOBBIES AND FIRST FLOOR CORRIDORS	100 PSF
HIGH DENSITY FILE STORAGE	200 PSF
MECHANICAL SPACES	150 PSF
STAIRS	100 PSF
ROOF	30 PSF

3. SNOW LOAD

   GROUND SNOW LOAD = 30 PSF
   SNOW EXPOSURE FACTOR Ce = 1.0 (EXPOSURE C)
   SNOW LOAD IMPORTANCE FACTOR = 1.2
   THERMAL FACTOR Ct = 1.0

4. WIND LOAD

   BASIC WIND VELOCITY = 90 MPH (3 SECOND GUSTS)
   IMPORTANCE FACTOR = 1.15
   EXPOSURE CATEGORY = C
   INTERNAL PRESSURE COEFFICIENT GCpi - +/- 0.18

5. SEISMIC LOAD

   IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE
   OCCUPANCY CATEGORY III
   SEISMIC IMPORTANCE FACTOR = 1.25
   MAPPED SPECTRAL RESPONSE ACCELERATIONS: Ss = 0.128, S1 = 0.058
   SITE CLASS: B
   SEISMIC DESIGN CATEGORY: A
   BASIC SEISMIC FORCE RESISTING SYSTEM: STEEL MOMENT RESISTING FRAMES (SEISMIC DETAILING REQUIRED)
   DESIGN BASE SHEAR = 65 K
   RESPONSE MODIFICATION FACTOR: Rd = 3, Cd = 3
   ANALYSIS PROCEDURE: EQUIVALENT STATIC FORCE

FOUNDATION DESIGN

1. THE FOUNDATION DESIGN IS BASED UPON THE GEOTECHNICAL REPORT PREPARED BY GAI CONSULTANTS (GAI PROJECT NUMBER: C060465.00.002, DECEMBER 2006). MINE GROUTING IS REQUIRED PRIOR TO FOUNDATION EXCAVATION. REFER TO DRAWING CM1-100.
2. ASSUMED ALLOWABLE SOIL BEARING CAPACITY = 6000 PSF
3. FROST DEPTH = 3 FEET

MATERIALS OF CONSTRUCTION

1. NORMAL WEIGHT CONCRETE — 28 DAY COMPRESSIVE STRENGTH
   GENERAL STRUCTURAL CONCRETE — F'c = 4000 PSI
2. LIGHTWEIGHT CONCRETE — 117 PCF PLUS OR MINUS 3 PCF
   CONCRETE FILL ON METAL DECK — F'c = 3500 PSI
3. REINFORCING STEEL – ASTM A615-GRADE 60 — Fy = 60 KSI
4. REINFORCING STEEL TO BE WELDED-ASTM A706 GRADE 60 — Fy = 60 KSI
5) WELDED WIRE FABRIC – ASTM A185 — Fy = 65 KSI
6. PRESTRESSED OR POST-TENSIONED TENDONS
   ASTM A-416 GRADE 270 — Fy = 270 KSI
7. STRUCTURAL STEEL
   WIDE FLANGE AND TEE SHAPES-ASTM A992 — Fy = 50 KSI
   ANGLES CHANNELS AND PLATE - ASTM A 36 — Fy = 36 KSI
   TUBES - ASTM A500 GRADE B — Fy = 46 KSI
   PIPES - ASTM A53 GRADE B — Fy = 35 KSI
   BOLTS - ASTM A325
   ANCHOR BOLTS - ASTM F1554 — Fy = 36 KSI
   HIGH STRENGTH ANCHOR BOLT ASSEMBLY
   ANCHOR BOLT - ASTM F1554 — Fy = 105 KSI
   NUTS – ASTM A563 GRADE D
   WELDING ELECTRODES - E70XX
   METAL ROOF DECKING (GALVANIZED) - ASTM A653 G60 (Z180) ZINC COATING FY = 33 KSI, STRUCTURAL QUALITY.
   COMPOSITE METAL FORM DECK (GALVANIZED) - ASTM A653 G60 (Z180) ZINC COATING FY= 40 KSI, STRUCTURAL QUALITY
8. EXTERIOR WALL FRAMING STUDS - ASTM A570
   - 18 TO 25 GAGE — Fy = 33 KSI
   - 12 TO 16 GAGE — Fy = 50 KSI
9. MASONRY
   CONCRETE MASONRY UNITS: ASTM C-90 — F'm = 1.5 KSI
   GROUT: ASTM C476 — F'c = 2.0 KSI
   MORTAR: ASTM C270 — F'c = 2.0 KSI
   JOINT REINFORCEMENT: TRUSS TYPE

CONSTRUCTION NOTES

A. GENERAL CONSTRUCTION NOTES

1. STRUCTURAL DRAWINGS SHOULD NOT BE SCALED. PRINTED DIMENSIONS HAVE PRECEDENCE OVER SCALED DRAWINGS AND LARGE SCALE OVER SMALL.
2. ALL DRAWINGS AND SPECIFICATIONS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE CIVIL, ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR LOCATION AND SIZE OF OPENINGS, BLOCKOUTS, FLOOR DEPRESSIONS, CURBS, DIMENSIONS, ETC. NOT INDICATED ON THE STRUCTURAL DRAWINGS. THE LOCATION AND SIZE OF MECHANICAL AND ELECTRICAL OPENINGS IN SLABS, WALLS AND DECKS SHALL BE COORDINATED BY THE CONTRACTOR. PROVIDE ALL ADDITIONAL FRAMING OR REINFORCING TO ACCOMMODATE OPENINGS AS REQUIRED BY THE APPLICABLE STANDARD DETAILS SHOWN ON THE STRUCTURAL DRAWINGS OR PROVIDED BY THE STRUCTURAL ENGINEER. NO HOLES, NOTCHES, BLOCKOUTS, ETC. ARE ALLOWED IN STRUCTURAL MEMBERS UNLESS DETAILED ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.
3. WHERE DIMENSIONS ARE PROVIDED FOR OPENINGS, BLOCKOUTS, FLOOR DEPRESSIONS, CURBS, ETC., BUT MAY BE AFFECTED BY THE EQUIPMENT PURCHASED, THE CONTRACTOR SHALL VERIFY THE INFORMATION PROVIDED PRIOR TO CONSTRUCTION.
4. PROVIDE CONCRETE EQUIPMENT PADS AND INERTIAL BASES FOR MECHANICAL AND ELECTRICAL INSTALLATIONS. CONSTRUCT PADS AND BASES IN ACCORDANCE WITH THE TYPICAL DETAILS. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR LIMITS AND LOCATIONS.
5. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS. CHECK AND VERIFY EXISTING DIMENSIONS AND TAKE ADDITIONAL MEASUREMENTS AS NEEDED. NOTIFY ARCHITECT OF ANY DISCREPANCY BETWEEN ACTUAL CONDITIONS AND INDICATED CONDITIONS. MODIFICATION OF DETAILS OF CONSTRUCTION SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE ARCHITECT OR STRUCTURAL ENGINEER.
6. CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR THE PROTECTION AND REPAIR OF ADJACENT EXISTING SURFACES AND AREAS WHICH MAY BE DAMAGED BY NEW WORK.
7. ALL COLUMNS AND FOUNDATIONS, UNLESS NOTED OTHERWISE, SHALL BE CENTERED ON GRIDLINES IN EACH DIRECTION. BEAMS SHALL BE EQUALLY SPACED BETWEEN COLUMN CENTERLINES UNLESS NOTED OTHERWISE.
8. TYPICAL DETAILS SHALL APPLY IN GENERAL CONSTRUCTION UNLESS SPECIFICALLY DETAILED. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS, SHORING AND TEMPORARY BRACING. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE AND SAFETY OF WORKMEN DURING CONSTRUCTION.
   A. DO NOT PLACE CONSTRUCTION MATERIALS OR OTHER CONSTRUCTION LOADS ON THE STRUCTURE SUCH THAT THE LOADS PLACED EXCEED THE CAPACITY OF THE STRUCTURE.
   B. TAKE INTO CONSIDERATION THAT FULL STRUCTURAL CAPACITY OF MANY STRUCTURAL MEMBERS IS NOT REALIZED UNTIL STRUCTURAL ASSEMBLY IS COMPLETE; THAT IS, UNTIL SLABS, DECKS, DIAGONAL BRACING AND SHEAR WALLS ARE INSTALLED.
   C. PROVIDE TEMPORARY BRACING AND GUYING TO PROVIDE STABILITY AND RESIST ALL LOADS TO WHICH THE PARTIALLY COMPLETED STRUCTURE MAY BE SUBJECTED INCLUDING ERECTION EQUIPMENT AND ITS OPERATION. ADEQUACY OF TEMPORARY BRACING AND GUYING FOR THIS PURPOSE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
   D. DO NOT BACKFILL AGAINST BASEMENT WALLS UNTIL FRAMED SLAB AND SLAB ON GRADE LOCATED TOP AND BOTTOM OF BASEMENT WALL HAVE BEEN PLACED AND HAVE REACHED THEIR 28-DAY DESIGN STRENGTH.

B. EARTHWORK AND FOUNDATIONS

1. ALL EARTHWORK AND SITE PREPARATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE SPECIFICATIONS AND THE GEOTECHNICAL REPORT. ALL FOUNDATION EXCAVATIONS SHALL BE OBSERVED AND APPROVED BY THE GEOTECH.
2. ANY EXISTING FILLS OR UNSUITABLE SOILS AS DETERMINED BY THE GEOTECH SHALL BE EXCAVATED AND REPLACED WITH PROPERLY COMPACTED FILL.
3. EXTREME CARE SHALL BE EXERCISED WHEN EXCAVATING OR GRADING ADJACENT TO EXISTING STRUCTURES OR IMPROVEMENTS SO AS NOT TO DAMAGE OR UNDERMINE FOUNDATIONS, WALLS, SLABS, UTILITIES, ETC.
4. DO NOT EXCAVATE BELOW THE BEARING ELEVATION OF ANY COMPLETED FOOTING NOR ANY CLOSER TO THE FOOTING THAN A SLOPE OF TWO HORIZONTAL (MEASURED FROM EDGE OF FOOTING TO NEAREST POINT IN EXCAVATION) TO ONE VERTICAL.
5. HORIZONTAL CONSTRUCTION JOINTS IN COLUMN FOOTINGS, PILE CAPS, SLABS ON GRADE AND MAT FOUNDATIONS ARE NOT PERMITTED.
6. PROVIDE DOWELS FOR ALL WALLS EMBEDDED INTO COLUMN FOOTINGS, MAT FOUNDATIONS AND GRADE BEAMS. DOWELS SHALL BE THE SAME SIZE AND SPACING AS VERTICAL WALL REINFORCEMENT.
7. BOTTOM OF ALL FOOTINGS AND PILE CAPS SUBJECT TO FROST SHALL BE PLACED AT OR BELOW FROST DEPTH.

C. CONCRETE AND REINFORCING

1. LOCATION OF CONSTRUCTION JOINTS OR POUR JOINTS SHALL BE AS INDICATED ON APPROVED SHOP DRAWINGS.
2. ALL CONCRETE SHALL BE VIBRATED DURING PLACEMENT.
3. PROVIDE 3/4" CHAMFER ON ALL EXPOSED CONCRETE CORNERS.
4. NO STAKES, STEEL OR WOOD, SHALL BE PERMITTED IN ANY CONCRETE POUR. SUSPEND FORMS FROM ABOVE GRADE.
5. ANCHOR BOLTS, DOWELS, REINFORCING STEEL, INSERTS, ETC., SHALL BE SECURELY TIED IN PLACE PRIOR TO POURING CONCRETE. CONCRETE BLOCKS ONLY SHALL BE USED TO SUPPORT REINFORCING OFF GRADE.
6. SOFT METRIC EQUIVALENT BAR SIZES ARE DEFINED AS FOLLOWS:

U.S. CUSTOMARY	-- EQUIVALENT SOFT METRIC
#3	#10
#4	#13
#5	#16
#6	#19
#7	#22
#8	#25
#9	#29
#10	#32
#11	#36
#14	#53
#18	#57

7. ALL REINFORCEMENT SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI 315.
8. PROVIDE MINIMUM CONCRETE COVERING FOR REINFORCEMENT AS FOLLOWS:
   CONCRETE DEPOSITED AGAINST EARTH: 3 IN.
   FORMED SURFACES EXPOSED TO WEATHER OR IN CONTACT WITH EARTH: 2 IN FOR REINFORCING BARS NO.6 OR LARGER; 1-1/2 IN FOR REINFORCING BARS LESS THAN NO.6.
   BUILDING INTERIOR SURFACES: 1-1/2 IN FOR BEAMS, GIRDERS, AND COLUMNS; 3/4 IN FOR SLABS, WALLS AND JOISTS WITH NO.11 BARS OR SMALLER, AND 1-1/2 IN WITH NO.14 AND NO.18 BARS.
9. PROVIDE DOWELS OF SAME SIZE AND NUMBER FROM ADJACENT POUR, BOTH VERTICALLY AND HORIZONTALLY, TO MATCH TYPICAL REINFORCING SHOWN. LAPS TO BE IN ACCORDANCE WITH THE DEVELOPMENT LENGTH AND LAP SPLICE SCHEDULE. DOWELS SHALL BE CLEANED AFTER POUR.
10. FIELD WELDING OR BENDING OF REINFORCING IS NOT PERMITTED EXCEPT AS INDICATED ON THE DRAWINGS OR AS APPROVED BY THE STRUCTURAL ENGINEER. USE LOW HYDROGEN ELECTRODES GRADE E70 OR E90 AS REQUIRED.
11. APPROVED ELECTRICAL CONDUIT MATERIAL CAST WITHIN STRUCTURAL CONCRETE MEMBERS SHALL CONFORM TO THE FOLLOWING:
   A. CONDUIT IN CONCRETE COLUMNS:
      INSTALL NO CONDUIT LARGER THAN 3/4" IN CONCRETE COLUMNS. DO NOT INSTALL MULTIPLE CONDUITS IN A SINGLE CONCRETE COLUMN WITHOUT THE STRUCTURAL ENGINEERS APPROVAL.
   B. CONDUIT IN SLAB ON GRADE:
      DIAMETER OF A SINGLE CONDUIT OR TWO OR MORE VERTICALLY STACKED CONDUITS (INCLUDING CROSSOVERS) SHALL NOT EXCEED 1/3 THE THICKNESS OF THE SLAB.THE OUTSIDE DIMENSION OF TWO OR MORE ADJACENT CONDUITS SHALL NOT EXCEED TWICE THE DEPTH OF THE SLAB AND THE SEPARATION BETWEEN GROUPS OF CONDUITS SHALL NOT BE LESS THAN THE THICKNESS OF THE SLAB.
   C. CONDUIT IN ELEVATED SLABS:
      DIAMETER OF A SINGLE CONDUIT OR TWO OR MORE VERTICALLY STACKED CONDUITS (INCLUDING CROSSOVERS) SHALL NOT EXCEED 1/6 THE THICKNESS OF THE SLAB. THE OUTSIDE DIMENSION OF TWO OR MORE ADJACENT CONDUITS SHALL NOT EXCEED THE DEPTH OF THE SLAB AND THE SEPARATION BETWEEN GROUPS OF CONDUITS SHALL NOT BE LESS THAN THE THICKNESS OF THE SLAB.
12. CONTINUOUS REINFORCEMENT IN WALLS AND FOOTINGS MAY BE SPLICED AS REQUIRED, PROVIDED THAT BARS ARE OF THE LONGEST PRACTICAL LENGTH AND ALL SPLICES ARE SHOWN ON THE REINFORCING BAR SHOP DRAWINGS. SPLICES ARE TO BE STAGGERED WHEN POSSIBLE. PROVIDE LAP SPLICES AND DEVELOPMENT LENGTHS IN ACCORDANCE WITH THE DEVELOPMENT LENGTH AND LAP SPLICE SCHEDULE. USE CLASS B LAP SPLICES UNLESS NOTED OTHERWISE.

D. ARCHITECTURAL PRECAST CONCRETE

1. SEE ARCHITECTURAL DRAWINGS FOR PANEL SIZES AND LOCATIONS.
2. ALL PANELS, CONNECTIONS, INSERTS, BRACES AND EMBEDMENTS IN PANELS AND OTHER NECESSARY CONNECTING ITEMS SHALL BE DESIGNED, DETAILED AND PROVIDED BY THE PRECAST MANUFACTURER.
3. CONNECTION AND PANEL DESIGN SHALL INCORPORATE ALL GRAVITY, WIND SEISMIC LOADINGS AS REQUIRED BY THE BUILDING CODE.

E. EXPANSION ANCHORS

1. EXPANSION ANCHORS SHALL BE A SINGLE-END EXPANSION SHIELD ANCHOR WHICH COMPLIES WITH THE DESCRIPTIVE PART OF FEDERAL SPECIFICATION A-A 1923A, TYPE 4 FOR WEDGE ANCHORS. WEDGE ANCHORS SHALL BE HILTI KWIK BOLT TZ. SHELL ANCHORS SHALL BE HILTI HDI. ANCHORS SHALL BE BY HILTI FASTENING SYSTEMS OF TULSA, OK. (ICC ES REPORTS ESR-1917 FOR WEDGE ANCHORS AND ESR 2895 FOR SHELL ANCHORS) OR EQUAL.
2. ANCHORS SHALL BE ZINC PLATED UNLESS SPECIFICALLY NOTED AS STAINLESS STEEL ON THE PLAN DETAILS.
3. WHEN DETAILS OF SECTIONS INDICATE EXPANSION ANCHORS BUT NO SIZE, PROVIDE ANCHORS WITH 3/4" DIAMETER.
4. PROVIDE THE FOLLOWING MINIMUM EMBEDMENT DEPTHS UNLESS NOTED OTHERWISE:

ANCHOR DIAMETER	EMBEDMENT DEPTH
1/4"	2"
3/8"	2 1/2"
1/2"	3 1/2"
5/8"	4"
3/4"	4 3/4"
1"	6"

5. WHEN INSTALLING DRILLED-IN-ANCHORS, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. WHEN INSTALLING THEM INTO CONCRETE WITH STRESSING TENDONS (POST-TENSIONED OR PRE-TENSIONED), LOCATE THE TENDONS BY USING A NON-DESTRUCTIVE METHOD PRIOR TO INSTALLATION. EXERCISE EXTREME CARE AND CAUTION AND MAINTAIN AT LEAST 1" CLEAR BETWEEN THE TENDON AND THE ANCHOR. CUTTING A TENDON CAN CAUSE COLLAPSE.

F. ADHESIVE DOWELLED ANCHORS

1. REINFORCING, BAR DOWELS, REINFORCING BARS, THREADED RODS, BOLTS ETC. WHICH ARE INDICATED TO BE ADHESIVE DOWELLED INTO CONCRETE OR SOLID MASONRY SHALL BE ACCOMPLISHED USING HIT HY-150 ADHESIVE BY HILTI FASTENING SYSTEMS OF TULSA, OK. (ICC REPORT NO. ER5193), OR EQUAL.
2. DRILL, BRUSH, AND CLEAN ALL HOLES, AND INSTALL ALL ANCHORS IN COMPLETE ACCORDANCE WITH MANUFACTURERS PUBLISHED RECOMMENDATIONS, AS WELL AS ALL APPLICABLE BUILDING CODES OR ENGINEERING REPORTS.
3. PROVIDE THE FOLLOWING MINIMUM ANCHOR EMBEDMENT DEPTHS UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DETAILS:

   A. REINFORCING BARS

BAR SIZE	EMBEDMENT DEPTH
#3	4"
#4	6"
#5	7"
#6	9"
#7	10"
#8	12"
#9	13"
#10	16"
#11	18"

   B. BOLTS OR THREADED RODS

DIAMETER	EMBEDMENT DEPTH
3/8"	5"
1/2"	7"
5/8"	8"
3/4"	10"
7/8"	12"
1"	13"

   C. HILTI HIS INSERTS

DIAMETER	EMBEDMENT DEPTH
3/8"	4 1/4"
1/2"	5"
5/8"	6 5/8"
3/4"	8 1/4"

G. HEADED STUDS AND DEFORMED BAR ANCHORS

1. HEADED STUDS AND DEFORMED BAR ANCHORS SHALL BE ELECTRIC-ARC STUD WELDED PER MANUFACTURERS RECOMMENDATIONS AND THE AWS CODE. FILLET WELDING SHALL NOT BE ALLOWED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER. WELDMENT SHALL BE IN SUCH A MANNER AS TO PROVIDE COMPLETE FUSION BETWEEN THE END OF THE STUD AND THE PLATE. THERE SHOULD BE NO POROSITY OF EVIDENCE OF LACK OF FUSION BETWEEN THE WELDED END OF THE STUD AND THE PLATE. THE STUD WILL DECREASE IN LENGTH DURING WELDING APPROXIMATLY 1/8" FOR 5/8" DIAMETER AND SMALLER , 3/16" FOR 5/8" DIAMETER.
2. HEADED STUDS SHALL BE TYPE B PER THE AWS CODE WITH A MINIMUM YIELD STRENGTH OF 51 KSI NELSON GRANULAR FLUX-FILLED (OR APPROVED EQUAL). STUDS SHALL BE MANUFACTURED OF COLD DRAWN BAR STOCK CONFORMING TO ASTM A-108.
3. DEFORMED BAR ANCHORS SHALL COMPLY WITH ASTM A-496 WITH A MINIMUM YIELD STRENGTH OF 70 KSI.
4. UNLESS NOTED OTHERWISE, DEFORMED BAR ANCHOR LENGTH SHALL BE AS FOLLOWS:

BAR DIAMETER	EMBEDMENT LENGTH
3/8"	24"
1/2"	24"
5/8"	30"

H. STRUCTURAL STEEL

1. STEEL FRAMING DESIGNATIONS AND SYMBOLS ARE DEFINED IN THE STRUCTURAL STEEL SYMBOL LEGEND.
2. ALL FIELD BOLTED SHEAR CONNECTIONS SHALL BE MADE WITH 7/8"DIAMETER A325 BOLTS, UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE FULLY PRETENSIONED AND INSPECTED USING TENSION CONTROL TWIST-OFF STYLE BOLTS. UNLESS SPECIFICALLY INDICATED AS SLIP CRITICAL OR PRETENSIONED, ALL JOINTS SHALL BE DESINGATED SNUG TIGHT. ROUTINE OBSERVATION THAT THE SPINED ENDS ARE PROPERLY SEVERED DURING INSTALLATION IS REQUIRED FOR ALL BOLTS.
3. PLACE NON-SHRINK GROUT UNDER ALL COLUMN BASE PLATES BEFORE PLACING ANY ELEVATED SLABS.
4. WHERE THE WORK OF OTHER TRADES REQUIRES CUTS OR OPENINGS TO BE MADE IN STRUCTURAL STEEL MEMBERS, APPROVAL SHALL BE OBTAINED FROM THE ENGINEER. SUCH OPENINGS SHALL BE MADE IN THE SHOP AND CLEARLY INDICATED ON THE SHOP DRAWING.
5. THE FOLLOWING PLATE THICKNESSES, WELD SIZES, AND ROD AND BOLT DIAMETERS SHALL BE CONSIDERED EQUIVALENT, UNLESS NOTED OTHERWISE:

THICKNESS OR DIAMETER

mm	INCHES	mm	INCHES
5	3/16	13	1/2
6 OR 6.5	1/4	16	5/8
8	5/16	19 OR 20	3/4
9.5 OR 10	3/8	22	7/8
		25	1

6. E70XX ELECTRODES SHALL BE USED FOR ALL WELDING. PROPERLY QUALIFIED WELDERS SHALL PERFORM ALL WELDING, AS PRESCRIBED UNDER "STANDARD QUALIFICATION PROCEDURE" OF THE AMERICAN WELDING SOCIETY.
7. WELD LENGTHS CALLED FOR ON THE PLANS ARE THE NET EFFECTIVE LENGTH REQUIRED. WHERE FILLET WELD SYMBOL IS GIVEN WITHOUT INDICATION OF SIZE, USE MINIMUM SIZE WELDS AS SPECIFIED BY AISC OR 3/16", WHICH EVER IS GREATER.
8. ALL GROOVE WELDS INDICATED ON PLANS AND SECTIONS SHALL BE COMPLETE JOINT PENETRATION WELDS (CJP) UNLESS SPECIFICALLY INDICATED TO BE PARTIAL PENETRATION WELDS.

I. COMPOSITE CONSTRUCTION

1. CONCRETE WITH CALCIUM CHLORIDE OR ANY ADMIXTURE CONTAINING CHLORIDES SHALL NOT BE USED WITH COMPOSITE STEEL DECK.
2. COMPOSITE BEAMS ARE DESIGNED FOR UNSHORED CONSTRUCTION. BEAMS SHALL BE FABRICATED WITH THE CAMBER INDICATED ON THE PLANS. BEAMS WITHOUT SPECIFIED CAMBER SHALL BE ERECTED WITH THE STANDARD MILL TOLERANCE CAMBER UP.
3. PROVIDE COMPOSITE DECK LAYOUT THAT IS CONTINUOUS OVER THREE OR MORE SUPPORTS. COMPLY WITH DECK MANUFACTURER SHORING REQUIREMENTS.
4. TO COMPENSATE FOR DEFLECTION OF THE STRUCTURE UNDER THE LOAD OF FRESHLY PLACED CONCRETE, THE SLAB THICKNESS SHALL BE INCREASED ACCORDINGLY TO PROVIDE A LEVEL SURFACE WITHIN TOLERANCE. ADDITIONAL CONCRETE SHALL BE PLACED AT NO ADDITIONAL COST TO THE OWNER.
5. CORE DRILLED OR CUT OPENINGS IN COMPOSITE SLABS SHALL NOT EXCEED 10" IN ANY DIMENSION. LARGER OPENINGS, WHEN REQUIRED SHALL BE BOXED OUT AND REINFORCED PER TYPICAL UNFRAMED OPENING DETAIL.

   CORE DRILLED OR CUT OPENINGS SHALL NOT BE PLACED CLOSER THAN 1 OPENING DIAMETER OR WIDTH TO ANY BEAM NOR SPACED CLOSER THAN 2 OPENING DIAMETERS OR WIDTHS. WHEN TWO ADJACENT OPENINGS ARE OF A DIFFERENT SIZE, SPACING SHALL BE BASED UPON THE LARGER SIZE.

   WHEN TOTAL WIDTH OF ADJACENT OPENINGS REQUIRED IS LARGER THAN 30" OR WHEN REQUIRED SPACING OF OPENINGS CANNOT BE MET, CORED OR CUT OPENINGS SHALL BE SUPPORTED ALONG ALL EDGES. PROVIDE W10X12 SUPPORT BEAMS AT THESE LOCATIONS. LOCATE BEAMS 6" CLEAR OF OPENING EDGES.
6. ELECTRICAL CONDUIT IN SLABS ON METAL DECK SHALL NOT BE PERMITTED.

J. STAIR DESIGN

1. CONTRACTOR SHALL PROVIDE COMPLETE DRAWINGS AND CALCULATIONS FOR ALL STAIRWAYS. STAIRS, STAIR LANDINGS, STAIR MEMBERS, AND SUPPORTS NOT SHOWN SHALL BE STRUCTUARLLY DESIGNED, DETAILED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE THAT THE PROJECT IS LOCATED.
2. ALL REQUIRED EMBEDDED ANGLES AND PLATES SHALL BE PART OF THE STAIR DESIGN AND DETAILING.
3. STAIRWAYS SHALL BE DESIGNED FOR DEAD LOAD, LIVE LOAD OF 100 PSF (4.8 kPa) AND SEISMIC LOADS.
4. STAIRS AND RELATED ITEMS SHALL COMPLY WITH THE BUILDING CODE.
5. REFER TO THE ARCHITECTURAL DRAWINGS FOR STAIRWAY DIMENSIONS, DETAILS AND OTHER REQUIREMENTS.
6. STAIRS MAY BE SUPPORTED BY THE PRIMARY STRUCTURE PROVIDED STAIR FRAMING DOES NOT IMPOSE ECCENTRIC OR TORSIONAL LOADING UPON THE PRIMARY FRAMING.

K. STEEL STUD EXTERIOR WALL FRAMING

1. CONTRACTOR SHALL PROVIDE COMPLETE DRAWINGS AND CALCULATIONS FOR ALL EXTERIOR STEEL STUD WALL FRAMING. ALL FRAMING MEMBERS, SPACING AND CONNECTIONS SHALL BE DESIGNED, DETAILED AND SEALED BY A PROFESSIONAL ENGINEER LICENCED IN THE STATE WHERE THE PROJECT IS LOCATED.
2. COMPLY WITH ALL LOADING REQUIREMENTS AS ESTABLISHED BY THE BUILDING CODE.
3. LIMIT MAXIMUM LATERAL DEFLECTION TO 1/600 OF SPAN WHERE EXTERIOR FINISH MATERIAL IS STONE OR MASONRY AND 1/360 OF SPAN OTHERWISE.
4. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONAL REQUIREMENTS, OPENING LOCATIONS, ETC., AND TO SPECIFICATION FOR ADDITIONAL REQUIREMENTS. STUDS SHALL BE DETAILED TO ACCOMMODATE MOVEMENT OF THE STRUCTURE THROUGH THE USE OF VERTICAL SLIDE CLIPS, SLIP CONNECTIONS, ETC.

L. POWDER ACTUATED FASTENERS

1. ALL POWDER ACTUATED FASTENERS SHALL BE APPROVED FOR TYPE, APPLICATION AND INSTALLATION AND SHALL HAVE AN APPROVED ICBO RESEARCH REPORT NUMBER.
2. FASTENERS SHALL NOT BE INSTALLED UNTIL THE CONCRETE HAS REACHED ITS DESIGN STRENGTH.
3. FASTENERS SHALL NOT BE INSTALLED IN CONCRETE WHERE THE THICKNESS IS LESS THAN THREE TIMES THE PENETRATION REQUIRED, EXCEPT 1 1/8" PENETRATION IN 3-1/4" THICK FLOOR SLAB IS ACCEPTABLE.
4. THE MINIMUM DISTANCE FROM THE EDGE OF CONCRETE TO CENTER OF ANCHOR IS 3 INCHES.
5. FASTENERS IN THE UNDERSIDE OF CONCRETE ON METAL DECKING SHALL BE PLACED IN THE HIGH FLUTE PORTION OF THE SLAB.
6. WHEN INSTALLING POWDER DRIVEN PINS IN EXISTING NON-PRESTRESSSED REINFORCED CONCRETE, USE CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE EXISTING REINFORCING BARS. WHEN INSTALLING THEM INTO EXISTING PRESTRESSED CONCRETE (PRE- OR POST-TENSIONED), LOCATE THE PRESTRESSED TENDONS BY USING A NON-DESTRUCTIVE METHOD PRIOR TO INSTALLATION. EXERCISE EXTREME CARE AND CAUTION TO AVOID CUTTING OR DAMAGING THE TENDONS DURING INSTALLATION. MAINTAIN A CLEARANCE OF 1 INCH BETWEEN THE REINFORCEMENT AND THE PIN.

M. MASONRY

1. ALL CONCRETE MASONRY UNITS SHALL BE HOLLOW BLOCK MADE WITH NORMAL WEIGHT AGGREGATE IN ACCORDANCE WITH ASTM C33.
2. ALL MASONRY WALLS SHALL BE REINFORCED UNLESS NOTED OTHERWISE, THE FOLLOWING SHALL CONSTITUTE MINIMUM REINFORCEMENT REQUIREMENTS:

WALL SIZE	VERTICAL REINFORCEMENT	TRUSS TYPE JOINT REINF.
6"	1-#5 AT 48" CENTERED	2-3/16" DIA. SIDE RODS AT 16"
8"	1-#6 AT 48" CENTERED	2-3/16" DIA. SIDE RODS AT 16"
10 & 12"	1-#7 AT 48" EACH FACE	2-3/16" DIA. DISE RODS AT 16"

3. PROVIDE VERTICAL REINFORCEMENT AS INDICATED. IN ADDITION, PROVIDE VERTICAL BARS AROUND ALL OPENINGS, AT CORNERS, ANCHORED INTERSECTIONS AND AT END OF WALL PANELS.
4. CONTINUOUS BOND BEAMS SHALL BE PLACED IN ONE OF THE TOP THREE COURSES OF ALL WALLS. BOND BEAMS SHALL BE REINFORCED AS FOLLOWS:

WALL SIZE	REINFORCEMENT
6"	1-#6
8"	2-#5
10 & 12"	2-#6

5. ALL REINFORCING SHALL HAVE A MINIMUM COVERAGE OF ONE BAR DIAMETER (1/2"MIN.) OF GROUT. CENTERED BARS SHALL BE SECURELY PLACED IN THE CENTER OF A CELL. EACH FACE BARS SHALL BE PLACED 1" CLEAR OF THE FACE SHELL. WHERE TWO LAYERS ARE REQUIRED IN 8" OR SMALLER BLOCK, USE ONE BAR IN EACH OF TWO ADJACENT CELLS.
6. CONTROL JOINTS: MAXIMUM SPACING OF CONTROL JOINTS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE. DO NOT PLACE CONTROL JOINTS IN SHEAR WALLS. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION ON LOCATION OF CONTROL JOINTS:

EXTERIOR WALLS	INTERIOR WALLS
30 FT	40 FT

7. ALL MASONRY WALLS SHOWN ON STRUCTURAL DRAWINGS ARE LOAD BEARING, UNLESS NOTED OTHERWISE. REFER TO ARCHITECTURAL DRAWINGS FOR NON-LOAD BEARING MASONRY WALLS.
8. REFER TO MECHANICAL, ELECTRICAL, PLUMBING AND ARCHITECTURAL DRAWINGS FOR LOCATIONS OF CONDUIT, PIPING, DUCTWORK, AND OPENINGS IN MASONRY WALLS. PROVIDE ADDITIONAL REINFORCEMENT AT OPENINGS OR SLEEVES AS INDICATED. DO NOT CUT REINFORCEMENT.
9. CONTINUOUS REINFORCING IN WALLS MAY BE SPLICED AS REQUIRED, PROVIDED BARS ARE OF THE LONGEST PRACTICAL LENGTH AND ALL SPLICES ARE SHOWN ON REINFORCING SHOP DRAWINGS. WHEREVER POSSIBLE, SPLICES SHALL BE STAGGERED.
10. LAP ALL REINFORCING BARS IN MASONRY 48 BAR DIAMETERS AT SPLICES. HORIZONTAL MASONRY REINFORCING SHALL BE CONTINUOUS AROUND ALL CORNERS AND INTERSECTIONS.
11. ALL VERTICAL REINFORCING SHALL BE CONTINUOUS FOR FULL HEIGHT OF WALL AND DOWELED INTO FOOTING OR SLAB ON GRADE BELOW AND EXTENDED INTO BOND BEAMS ABOVE. CONTINUITY MAY BE ESTABLISHED WITH LAPPED SPLICES MEETING ALL INDICATED REQUIREMENTS.
12. FILL ALL CELLS BELOW GRADE WITH GROUT. FILL ALL CELLS CONTAINING REINFORCEMENT WITH GROUT.
13. CELLS CONTAINING BOLTS SHALL BE GROUTED SOLID WITH AT LEAST 1" GROUT COVERAGE BETWEEN THE BOLT AND THE MASONRY AT THE BLOCK FACE.
14. GALVANIZED STEEL ANGLE LINTELS SHALL BE USED FOR BRICK MASONRY LINTELS. PROVIDE ONE STEEL ANGLE FOR EACH 4 INCHES OF WALL THICKNESS. PROVIDE A MINIMUM OF 5 INCHES OF BEARING AT EACH END.

OPENING	STEEL ANGLES
UP TO 5'-0"	L4X3-1/2X1/4
UP TO 6'-0"	L5X3-1/2X5/16
UP TO 7'-0"	L6X3-1/2X5/16
UP TO 8'-0"	L6X4X3/8

15. LINTELS FOR CMU WALLS MAY BE CONSTRUCTED CONSISTENTLY IN ONE OF THE FOLLOWING METHODS:
   1. MASONRY UNITS WITH GROUT FILL
   2. CAST-IN-PLACE REINFORCED CONCRETE
   3. PRECAST CONCRETE LINTELS

   PROVIDE TEXTURE AND PROVIDE VERTICAL DUMMY JOINTS MATCHING PATTERN OF VERTICAL JOINTS AND SCORING IN CONCRETE MASONRY WALLS IN WHICH LINTEL IS INSTALLED FOR BOTH THE CAST-IN-PLACE CONCRETE OR PRECAST CONCRETE LINTEL OPTIONS. CAST-IN-PLACE CONCRETE OR PRECAST CONCRETE SHALL BE NORMAL WEIGHT WITH F'c = 4000 PSI.
   PROVIDE A MINIMUM BEARING OF 6 INCHES AT EACH END OF LINTEL.
   FOR OPENINGS UP TO 10 FEET IN WIDTH,PROVIDE THE FOLLOWING LINTEL:

   8" X 8"CONCRETE WITH 2-#5 BOTTOM BARS
   8" X 16" CMU WITH 2-#5 BOTTOM BARS
16. REFER TO MECHANICAL, ELECTRICAL, PLUMBING AND ARCHITECTURAL DRAWINGS FOR LOCATIONS OF CONDUIT PIPING AND DUCTWORK OPENINGS IN MASONRY WALLS. PROVIDE ADDITIONAL REINFORCEMENT AT OPENINGS OR SLEEVES AS INDICATED. DO NOT CUT REINFORCEMENT

N. QUALITY ASSURANCE

1. THE OWNER SHALL EMPLOY QUALIFIED SPECIAL INSPECTORS TO PERFORM INSPECTIONS IN ACCORDANCE WITH THE BUILDING CODE. AS A MINIMUM THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION:

   A. CONCRETE:
      1. REINFORCING STEEL INCLUDING PRESTRESSING TENDONS AND PLACEMENT PRIOR TO THE CLOSING OF THE FORMS OR THE CONCRETE ARRIVING AT THE JOBSITE.
      2. REINFORCING STEEL WELDING.
      3. ANCHOR BOLTS, PRIOR TO AND DURING CONCRETE PLACEMENT.
      4. VERIFYING USE OF APPROVED MIX DESIGN
      5. SAMPLING FRESH CONCRETE AND PERFORMING SLUMP, AIR CONTENT, AND DETERMINATION OF TEMPERATURE OF FRESH CONCRETE AT THE TIME OF MAKING SPECEMINS FOR STRENGTH TESTS.
      6. INSPECTION OF PROPER CONCRETE PLACEMENT
      7. INSPECTION FOR MAINTAINENCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.
      8. INSPECTION OF PRESTRESSED OR POSTENTIONED CONCRETE, AT THE APPLICATION OF PRESTRESSING FORCES AND DURING THE GROUTING OF BONDED TENDONS.
      9. ERECTION OF PRECAST MEMBERS
      10. VERIFICATION OF REQUIRED INSITU STRENGTH PRIOR TO PRESTRESSING OR FORM REMOVALS.
      11. INSTALLATION OF ALL ADHESIVE ANCHORS.

   B. STRUCTURAL STEEL:
      1. MATERIAL VERIFICATION OF HIGH STRENGTH BOLTS, NUTS, AND WASHERS.
      2. INSPECTION OF HIGH STRENGTH BOLTING.
      3. MATERIAL VERIFICATION OF STEEL AT THE JOBSITE IN ACCORDANCE WITH ASTM A 6 OR A 568.
      4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS.
      5. INSPECTION OF FIELD WELDING. CONTINUOUS INSPECTION OF ALL COMPLETE PENETRATION JOINT WELDS AND MULTIPASS FILLET WELDS. PERIODIC INSPECTION OF ALL OTHER WELDS.
      6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONTRACT DOCUMENTS.

   C. LOAD BEARING MASONRY:
      1. PROPORTIONS OF MORTAR AND GROUT.
      2. CONSTRUCTION OF MORTAR JOINTS.
      3. LOCATION AND GRADE OF REINFORCEMENT AND CONNECTORS.
      4. TYPE, SIZE, AND LOCATION OF ANCHORS, INCLUDING ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONSTRUCTION.
      5. PROTECTION OF MASONRY DURING COLD WEATHER.
      6. INSPECTION OF GROUT SPACE AND GROUT PLACEMENT.
      7. PREPARATION OF GROUT AND MORTAR SPECIMENS.

   D. SOILS:
      1. DURING PROOF-ROLLING AND PRIOR TO PLACEMENT OF FILLS.
      2. DURING PLACEMENT OF FILLS.
      3. EVALUATION OF IN PLACE DENSITY.
      4. APPROVAL OF FOOTING SUBGRADES.
      5. PILE LOAD TESTING AND DURING INSTALLATION OF PILE FOUNDATIONS.

   E. SPRAY APPLIED FIREPROOFING:
      1. SURFACE MEMBER PREPARATION.
      2. APPLICATION CONDITIONS AND THICKNESS
      3. DENSITY AND BOND STRENGTH

2. SPECIAL INSPECTORS SHALL BE QUALIFIED BY TRAINING AND EXPERIENCE FOR THE REQUIRED INSPECTIONS AND MUST BE ACCEPTABLE TO THE A/E. INSPECTORS SHALL PERFORM ALL DUTIES AND RESPONSIBILITIES AS REQUIRED BY THE BUILDING CODE.

FOR CONSTRUCTION

FULLY SPRINKLERED

Revisions: | Date

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ARCHITECTURE
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Approved: Project Director

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